

# **SPECIAL PROVISIONS**



**City of Surprise  
C.I.P. # 21525**

**Waddell Road Median Improvements  
140<sup>th</sup> Drive to Litchfield Road**

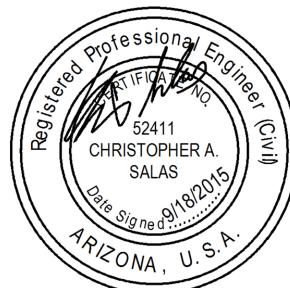
**September 18, 2015**

## **PREPARED BY**

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(WPA PROJECT NO. 154307)**

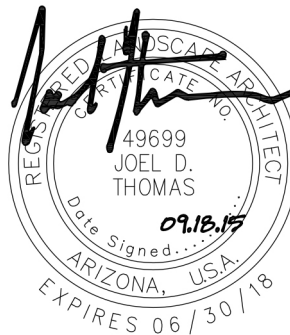
## PROFESSIONAL ENGINEER SEALS

Wood, Patel & Associates Inc. (Roadway, Drainage, Utility Relocation)



EXPIRES 06-30-2017

Norris Design. (Landscaping, Irrigation)



EXPIRES 06/30/18

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## **PART A: SCOPE OF WORK**

### **1. PROPOSED WORK**

This project is located in the City of Surprise. The general boundaries of the project are along Waddell Road, between 140<sup>th</sup> Avenue to the west and the Litchfield Road to the east.

The work generally consists of the removal of existing asphalt/subgrade & the construction of new median single curb, installation of median landscaping and irrigation, as well as, traffic signing and marking.

The work embraced herein shall be performed in accordance with the requirements of the following separate documents except as modified in these Special Provisions or on the Contract Plans. If a bid item is identified by more than one Standard Specification, the following is listed in priority.

City of Surprise Design Engineering Standards, August 2012, including latest revision from 2015

Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments' Uniform Standard Specifications (January 1, 2015)

Maricopa Association of Governments "Uniform Standard Specifications for Public Works Construction" (2012, Revised thru 2014)

Maricopa Association of Governments "Uniform Standard Details for Public Works Construction", (2012, Revised thru 2014)

Arizona Department of Transportation, Standard Specifications for Road and Bridge Construction, Edition of 2008.

Arizona Department of Transportation, Highways Division, Traffic Signals & Lighting Standard Drawings, 2013.

Arizona Department of Transportation, Signing and Marking Standard Drawings, 2014.

Arizona Department of Transportation, Structures Standard Drawings, 2012.

Arizona Department of Transportation, Roadway Engineering Construction Standard Drawings, 2012.

Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 edition and Arizona Supplement to the 2009 edition, May 2012

The above Items of work, along with the construction requirements, are adequately described and defined in the Uniform Standard Specifications for Public Works Construction sponsored and distributed by the Maricopa Association of Governments (MAG) along with the MAG Uniform Standard Details and the City of Surprise Supplements thereto, latest revisions, or within these special provisions. In the event of conflict, the City of Surprise Supplements will prevail.

The information written into these special provisions will:

- Describe any special or unusual conditions.
- Explain details of the work not covered in the MAG Specifications and Details or the City of Surprise supplements thereto.
- Relate certain work to specific bid Items or payment quantities.
- Contain the specifications and/or requirements of utility companies affected or included within the drawings and specifications of this project.
- General construction notes for City of Surprise projects are included in the plan set and shall be representative, unless specifically noted otherwise, to all plan sheets.

## **PART B: GENERAL INFORMATION**

### **1. SALES AND USE TAXES**

The Contractor shall not include sales or use taxes on certain materials and equipment to be installed on this project as described in Arizona Revised Statutes 42-1316 and 42-1409.

The Contractor shall furnish the City with a list of suppliers including materials and equipment furnished by each, which are applicable to this exemption.

### **2. PRECONSTRUCTION CONFERENCE/WEEKLY MEETINGS**

**Preconstruction Conference:** The Contractor and all subcontractors shall attend a preconstruction conference meeting at a time and location designated by the City of Surprise (City). The Contractor shall be prepared and ready to present to the City all required schedules, plans, etc., as described elsewhere in these special provisions and within the MAG Standard Specifications.

**Weekly Meetings:** The Contractor shall plan for and attend weekly meetings with the City at a location and designated time determined by the City. The Contractor shall include in the construction schedule adequate time for weekly construction progress meetings.

Contractor shall submit a 2-week schedule at each meeting and prepare and distribute meeting minutes within 48 hours following the meeting.

**Contract Documents:** Approved drawings, data, mixes and certificates as they are returned to the Contractor will become a portion of the Contract Documents.

### **3. PUBLIC NOTIFICATION**

Unless otherwise directed by the City, the Contractor shall notify all residents, businesses, and schools located along the frontage (1/4 mile radius) of a specific project by handbill or door-hanger, no later than 48 hours and no earlier than 2 weeks prior to commencement of the work phase. The handbill shall include the Contractor's phone number, and alternate work day schedule in case of delay due to weather. The Contractor shall re-notify all areas where work was not performed as scheduled. Door-hangers shall be bright yellow with red lettering and shall be 3 to 5 inches wide by 10 to 12 inches long. Door-hangers shall be pre-cut to be readily secured to doorknobs and pulls, so that they cannot be inadvertently detached or blown off. Any costs associated with notification or re-notification shall be considered incidental to the project.

The Contractor shall provide black-on-orange pre-construction advisory signs to be placed on commuter streets to be serviced, two full calendar weeks prior to start of the project. The signs shall state that a pedestrian connectivity project is to take place, the planned dates of start and finish, and shall state that an alternate route of travel is suggested. Sign dimensions may vary according to application and will be determined by the City. This provision is for use on streets where handbill notification is not practical. This requirement is not a separate pay item.

The City will require the stationing of lighted variable message signs (VMS) prior to and during the work phase for pre-notice and to facilitate traffic movement and promote work zone safety. The

costs of these VMS signs, and all other traffic control costs, shall be reimburse to the Contractor through existing bid items.

Contractor to coordinate with the City Engineer or their Representative for Public Notification Guidelines, and shall not move forward with notifications until written approval from City is provided.

#### **4. CONSTRUCTION PRACTICE**

All construction practices and procedures shall conform to Section 107 of the Contract Works Hours and Safety Standards Act (US Stat. 96, 40 USC 327); the latest revisions shall prevail.

#### **5. INSPECTION**

Inspectors may be stationed on the work to report to the City, or his Designee, as to the progress of the work, the manner in which it is being performed, and also to report whenever it appears that material furnished or work performed by the Contractor fails to fulfill the requirements of the specifications and contract documents. The Inspector may direct the attention of the Contractor to such failure or infringement but such inspection shall not relieve the Contractor from any obligation to furnish acceptable materials and labor or to provide completed construction that is satisfactory in every particular.

In case of any dispute arising between the Inspector and the Contractor as to material furnished or the manner of performing the work, the Inspector shall have the authority to reject materials or suspend the work until the question and issue can be referred to and decided by the City. Inspectors are not authorized to revoke, alter, enlarge, relax, or release any requirements of the specifications. Inspectors shall in no case act as foremen or perform other duties for the Contractor or interfere with the management of the work by the Contractor.

Inspection or supervision by the City or Designee shall not be considered as direct control of the individual workman and his work. The direct control shall be solely the responsibility of the Contractor.

#### **6. WORKMANSHIP**

Where not more specifically described, workmanship shall conform to all of the methods and operations of best standards and accepted practices of the trade or trades involved and shall include all Items of fabrication, construction or installation regularly furnished or required for completion.

All work shall be executed by tradesmen skilled in their respective lines of work.

When completed, all work shall have been durably and substantially built and shall present a neat, workmanlike appearance.

#### **7. LIMITS OF WORK**

The Contractor, in cooperation with the City's Inspector, shall verify and agree to the boundaries of the work prior to the start of construction. Upon starting construction, the Contractor shall be responsible for replacing all missing, removed or damaged boundary delineating materials, such as walls, fences, etc. Boundaries of work are hereby established as the furthest line distant left or right



of the construction centerline as existing right-of-way, new right-of-way, drainage easement or temporary construction easement as shown on the plans. Once construction activities have commenced, no disturbance of the existing ground beyond such delineated line shall take place. ***Intrusion outside of the limits by the Contractor will be penalized \$100 per square yard. Any aggregated amount shall be deducted from the Contractor's final payment.***

## **8. PLANS AND SHOP DRAWINGS**

Plans and Shop drawings shall conform to Section 105.2 of the MAG Standard Specifications except as modified as follows:

The Contractor shall furnish to the City of Surprise's Construction Coordinator, product data, material certificates, mix designs and shop drawings in sufficient detail to show complete compliance with all specified requirements, including but not necessarily limited to the following:

The Contractor shall furnish to the City of Surprise's Project Manager material certificates, mix designs, shop drawings and samples in sufficient detail to show complete compliance with all specified requirements, including but not necessarily limited to the following:

### **Product Data:**

Material and product data shall include information such as the manufacturer's printed recommendations, compliance with recognized trade association standards, application of testing agency labels and seals, product dimensioning, and notation of coordination requirements.

### **Certificates:**

The certificates shall be prepared by the Manufacturer or testing agency thereof and should include technical specifications and compliance with industry trade association and testing agency standards.

### **Shop Drawings:**

Shop drawings shall include the name of the project, project number, date prepared, name of the Preparer, Contractor, and Subcontractor, if applicable. All dimensions and identification of products and materials included, along with notation of any coordination requirements and established field dimensions/measurements/verifications shall be clearly shown or noted.

Drawings of minor or incidental fabricated material and/or equipment may not be required by the City of Surprise. The Contractor shall furnish the City tabulated lists of such fabrications, showing the names of the manufacturers and catalog numbers, together with samples of general data as may be required to permit determination by the City as to their acceptability for incorporation into the work.

### **Samples:**

Samples shall be representative of the materials to be incorporated into the project and submitted in sufficient quantity to permit evaluation and/or comparison.

### **Distribution and Review:**

The Contractor shall anticipate and schedule for a two week (calendar days) review period by the City of Surprise and/or its designee during which time will either approve, disapprove, or request modifications. The latter two will require re-submittal of the material and a subsequent additional review period. This process shall be repeated until all submitted materials have been approved.

Shop drawings shall be on sheets in standard size increments between 8 1/2" x 11" and 11" x 17" or 24" x 36". All drawings shall indicate the name of the job, the City's job number, date, names of the Contractor, Subcontractor and Preparer, and the date of approval by the Contractor. All other data, certificates or mix design reports shall be presented on 8 1/2" x 11" format, or as provided by the Supplier/Manufacturer.

Five (5) Contractor approved copies along with a letter of transmittal shall be delivered to the City's Construction Coordinator. The Contractor shall first review all submitted data for compliance with specification and job requirements. Any Contractor comments, recommendations, etc. shall be clearly noted on the submitted data.

If the submittal is acceptable, three (3) copies will be stamped approved, dated, initialed by the Reviewer, and returned to the Contractor.

If the submittal requires corrections or is rejected, three (3) copies along with an explanation of the outstanding concerns will be returned to the Contractor for revision and resubmittal as described above. Re-submittal of any required corrections shall be made within ten working days.

### **Contract Documents:**

Approved drawings, data, mixes and certificates as they are returned to the Contractor will become a portion of the Contract Documents.

## **9. COOPERATION WITH UTILITIES**

The following utility companies are known to have facilities in the area of this project. The appropriate individuals to contact and their telephone numbers are listed for the Contractor's convenience:

<b>Utility Provider</b>	<b>Contact Person</b>	<b>Phone Number</b>
Epcor	Marc Allen	(623) 445-2451
Arizona Public Service (APS)	Ronnie Gandara	(602) 371-7546
Cox Communication (Fiber)	Randy Simms	(623) 328-4058
CenturyLink	Eric Hitchcock	(602) 460-1233
Southwest Gas	Yvonne Aguire	(602) 484-5338

Cooperation of Utilities shall conform to Section 105.6 of the MAG Standard Specifications except as modified as follows:

Utility locations shown on the plans are approximate. The Contractor shall be responsible for identifying all underground utility locations where construction occurs. The Contractor shall notify

Blue Stake (602-263-1100) at least two (2) working days prior to beginning construction for field location of existing utilities. Should a utility be hit during construction activities, the Contractor shall contact Blue Stake and the utility company immediately.

The Contractor shall exercise special care and shall follow the utility company's procedures while working near high pressure gas lines or high voltage overhead or underground electric facilities.

The locations of existing underground utilities have been shown on the plans to the best of the Design Engineer's knowledge; however, it shall be the Contractor's responsibility to field verify all utility locations and to coordinate in a timely manner with the pertinent utility companies so that any obstructing utility installation may be adjusted without delay to the Contractor's project schedule. Contractor shall adequately protect and maintain all existing utilities. Any utility, whether shown or not, damaged due to construction shall be repaired immediately at the Contractor's expense.

In addition, the City of Surprise shall not consider additional compensation requests from the Contractor to perform any potholing, utility company coordination, etc. needed to locate/verify utility location, to adjust contract work items as necessary to avoid utility line conflict, to cooperate with utilities in adjusting schedule as needed to allow for utility company work, relocations, etc.

## **10. COMMENCEMENT, PROSECUTION AND PROGRESS**

Commencement, Prosecution and Progress shall conform to Section 108.2 of the MAG Standard Specifications except as modified as follows:

The Contractor shall perform, within his own organization, work amounting to not less than 50% of this contract.

## **11. CONSTRUCTION SCHEDULE**

Construction Schedule shall conform to Section 108.4 of the MAG Standard Specifications except as modified as follows:

The Contractor shall furnish the City a construction schedule for review. The City's review of the Contractor's schedule is for the purposes of 1) the City's staffing the project as may be required; 2) to insure general compliance with the contract documents as it relates to the completion of the work; and 3) to monitor and evaluate the construction status for purposes of approving progress payments. In the event the schedule does not contain sufficient information to meet the above purpose, as determined by the City, the Contractor shall resubmit a new schedule with the additional information requested by the City. The construction schedule shall not be changed without the written consent of the City. The orderly procedure of all work to be performed shall be the responsibility of the Contractor.

The schedule shall identify the work to be performed, including the location and duration of planned activities. Submittals shall be made a minimum of seven days prior to the planned work to allow sufficient time for the City to review and schedule any necessary inspections.

The Contractor shall provide weekly updates to the construction schedule for review with the Construction Coordinator or duly authorized representative. Failure to provide such weekly updates will result in retention of monthly progress payments until the schedule is updated.

Review of a submitted schedule by the City shall in no way be construed as an affirmation or admission that the schedule is reasonable or workable which responsibilities remain the obligations of the Contractor. When the schedule shows a completion prior to the contract completion date, this extra time between the contract completion date and the scheduled completion date (float), may be used by the City without additional compensation to the Contractor. The City shall not be liable to the Contractor for any damages for delay if the Contractor completes the work prior to the expiration of the original Contract completion date or as modified by approved change orders, if any.

## **12. LIMITS OF OPERATIONS**

Section 108.5, Limitations of Operations of the MAG Standard Specifications are modified as follows:

The project may be sequenced as the Contractor desires, subject to review by the City.

The Contractor shall schedule his work in such a manner that once construction begins, it shall be completed in an expeditious manner. Access to businesses and residences must be maintained between the hours of 5:00 AM and 10:00 PM. Periodic, infrequent closures of short duration (less than two-hours) must be coordinated with the affected businesses and residents. Prior to any closures of accesses, the Contractor shall give adjacent businesses and residences 48 hours notice and provide them with a schedule as to when they would have full access restored. Access to fire lane shall remain open at all times.

The Contractor shall publish and distribute a monthly update letter to all affected businesses and residences. The update letter shall be reviewed by the City's Project Manager prior to printing and distribution. The first letter shall be distributed the business day after the Pre-Construction Conference.

Contractor to coordinate limits of operations with the City Engineer or their Representative.

## **13. ADDITIONAL CONSIDERATIONS**

Irrigation systems in landscaped areas, as well as the landscape/hardscape items, disturbed by the Contractor's operations shall be restored to original functioning order. Contractor shall salvage Hardscape material, including pavers and DG, reinstall to limits and per details on plans and these special provisions, and dispose of unused quantities.

#### **14. SAWCUTTING**

Sawcutting shall be required at all pavement, curb & paver tie-in locations. Any location where concrete is sawcut and new concrete shall be installed adjacent to it, expansion material shall also be installed.

Sawcutting of existing improvements shall conform to Section 336 and 350 of the MAG Standard Specifications. There will be no separate measurement or payment for Sawcutting of existing improvements, the cost of which shall be inclusive of other bid items.

#### **15. MATERIAL SAFETY DATA SHEETS**

Contractor to supply Material Safety Data Sheets to the City Engineer or their Representative for all items utilized on the project.

#### **16. PERMITS**

Permitting Section 107.2 of the MAG Standard Specifications shall be deleted and the following inserted:

It shall be the responsibility of the Contractor to obtain **all** required permits for construction, dust control, relocation of native plants, utility relocations, etc. including no cost permits from the City of Surprise. Any other permits or fees needed for the work will be paid for by the Contractor, Reimbursement to Contractor shall be made under appropriate bid items.

A special grading permit at the Contractor's expense will be required when using spoils to fill private property. No grading will be allowed until a Grading and Drainage Plan/Concept has been approved by the City.

All haul routes for removals; excavation and dirt moving must be approved by the City of Surprise prior to commencement of operations.

This project is subject to the Maricopa County Air Pollution Control Regulations. The Contractor shall comply with the provisions of Surprise MAG Supplemental Specification Subsection 107.2.2.

This project is subject to the National Pollutant Discharge Elimination System (NPDES) storm water requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona.

#### **17. SCHEDULE OF LABOR AND EQUIPMENT**

Contractor to provide a Schedule of Labor and Equipment Costs on a Time and Material Basis with their construction bid. This should include Project Manager, Project Engineer, Superintendent, Foreman, Laborers, Operators, Drivers, etc. to the City Representative 2-weeks after notification of award.

## **18. SPECIALTY SIGNS**

**General:** This item shall be required by the City as part of this project, and as part of traffic control. This item will be used at the City's request.

**Authorization:** The use of this bid Item shall be through the written direction of the City. The City will provide the language to be noted on the specialty signs, and the location for the installation of the signs.

**Signs:** Specialty signs are construction signs consisting of orange reflective background with black construction lettering conforming to the City of Phoenix Barricade Manual, or other signage as specified by the governing jurisdiction. Each construction sign will have two signs posts, two flashers, two flags, and be ballasted with sandbags and will generally be 18 to 24 square feet, depending on the need.

The total amount indicated on the schedule of bid Items will be adjusted accordingly by the City through a change order to reflect the actual amount used.

## **19. RECORD DRAWINGS**

Contractor shall provide Record Drawings which shall clearly show all differences between the contract work as drawn and as installed for all work, as well as work added to the contract which is not shown on the Contract Drawings.

The Contractor shall maintain one set of Record Drawings at the job site. These shall be kept legible and shall be available for inspection at all times by the City. Show all changes in the contract work, or work added, on these Record Drawings in a contrasting color (red) including work changed by Addendum or Approved Change Order.

City shall review the Record Drawings on a monthly basis and shall be the sole judge of the acceptability of these drawings. Update Record Drawings showing all as-built construction shall accompany each progress payment submittal.

Upon completion of the project, submit final Record Drawings to the City for final review. Upon receiving approval by the City of the Record Drawings, deliver them together with one set of prints to the City's Project Manager. Final acceptance of the project will not be given until all such information is submitted.

## **20. CONTRACT TIME**

The Contractor shall complete all project work within **60** working days beginning with the start date specified in the Notice to Proceed.

## **PART C: BID ITEMS**

The following bid Items are numbered to correspond to the Schedule of Bid Items and are included to explain details of work that may not be covered by applicable Standard Specifications and to relate work and pay quantities to the specific Bid Item.

Any Items of work shown on the plans but not covered by bid Items, as shown on the bid schedule, shall be considered incidental to the project.

### **ITEM 1 – REMOVE ASPHALT CONCRETE PAVEMENT & SUBGRADE**

**Description:** Removal asphalt concrete pavement to conform to Section 350 of the MAG Standard Specifications except as modified herein.

**General:** The work under this item is for the removal of existing asphaltic concrete pavement, and existing ABC to a depth as indicated on the plans. Contractor shall take every precaution necessary to prevent the exposed base material from becoming contaminated with debris or other material and from disturbing or damaging any existing underground utilities. Any excess materials from milling or other removal techniques not used on the project will be removed by the Contractor to a site of their choosing off the project area.

The depth of the existing pavement is approximately 4 to 8 inches excluding the ABC, Contractor to verify depth and make determination.

**Measurement & Payment:** Payment for Removal of Asphalt Concrete Pavement, including base course and subgrade, shall be at the unit price per square yard specified in the Bid Schedule and shall include all labor and materials required to remove and dispose of the pavement to a location off of the project site.

### **ITEM 2 – SINGLE CURB PER MAG STD DET 222**

**Description:** Single Curb shall be constructed per MAG Standard Detail 222, Type A.

**Measurement & Payment:** Payment for single curb shall be at the unit price per linear feet, as specified in the Bid Schedule and shall include all labor, equipment and materials necessary to complete this task.

### **ITEM 3 – 5" AC (2" OF 1/2" - HIGH TRAFFIC, 3" OF 3/4" MIX - HIGH TRAFFIC) ON 9" ABC PER STRUCTURAL SECTION #1 [INCLUDES SUBGRADE PREP]**

**Description:** Installation of A/C, Aggregate Base Course & Subgrade Preparation, shall conform to the following:

**Subgrade Preparation:** Subgrade Preparation shall conform to Section 301 of the MAG Standard Specification. This item accounts for all excavation, fill, grading, and compaction to prepare the subgrade and/or graded shoulders in accordance with MAG Sections 205 and 301 and current

supplements. This item includes the subgrade preparation for the raised median areas. Subgrade preparation shall be to the full depth of structural Pavement Section shown on project construction plans.

**Aggregate Base Course (ABC):** Aggregate Base Course shall conform to Section 310 of the MAG Standard Specifications. Thickness per Pavement Structural Section on the project construction plans.

**Asphalt Concrete Pavement (A/C) - City of Phoenix Mix:** Asphalt Concrete Pavement shall conform to Section 321 of the MAG Standard Specifications. The surface course shall not be placed until all landscaping has been completed and accepted by the City of Surprise, and all work that might result in earth being deposited on the finished road has been completed. Thickness per Pavement Structural Section on the project construction plans.

**Replace Damaged Pavement:** The Contractor will be responsible to replace, at their cost, any and all damaged pavement outside the pay limits, due to their activities on the project. This includes, but is not limited to, the replacement of newly cracked pavement, the replacement of existing cracked pavement where the cracks have been widened, the replacement of any chipped or missing pieces of pavement, and the replacement of any deformed pavement. The pavement will be sawcut at right angles to the roadway, to encompass the replacement areas.

**Measurement and Payment:** Payment for A/C, Aggregate Base Course & Subgrade Preparation including the preparation for landscape areas, will be paid at the unit price of square yard as specified in the Bid Schedule and shall include all labor, equipment and materials.

#### **ITEM 4 – MEDIAN NOSE TRANSITION**

**Description:** Median nose transitions shall be constructed per MAG Standard Detail 223. Detail shall be modified to include a single curb instead of a vertical curb and gutter. Construction shall also comply with MAG Standard Detail 222.

**Measurement and Payment:** Payment for median nose transition will be paid at the unit price of per each as specified in the Bid Schedule and shall include all labor, equipment and materials.

#### **ITEM 5 – 1" IRRIGATION RECLAIMED WATER METER AND SERVICE**

**Description:** 1" Irrigation Reclaimed Water Meter and Service shall be constructed per City of Surprise Standard Section 6.6, 8.1 and 8.2. This item includes but not limited to, Corp Stop, Service Pipe, Appurtenant Fittings, Curb Stop, Meter Box. Water Meter and Meter Coupling as specified in City of Surprise Standard Detail to be installed by City, upon proper application and payment of fees.

**Measurement and Payment:** Payment for 1" Irrigation Reclaimed Water Meter and Service will be paid at the unit price of per each as specified in the Bid Schedule and shall include all labor, equipment, materials and associated permit and meter fees.



## **ITEM 6 – LANDSCAPE AND PLANTING Item 6.1 to 6.6**

**Description:** These items are for furnishing all labor, materials, supplies, equipment, tools and transportation, to perform all operations to complete installation of landscape planting as shown on drawings and as specified. Items of work include but are not limited to:

- Procurement of all applicable licenses, permits, and fees.
- Coordinate all work with other contractors.
- Preparation of existing soil in all landscape areas to include tilling and preparation of soil for addition of amendments and construction of aggregate profile per plans.
- Contractor to perform soils investigation to include agronomy and bioassay tests to verify needed soil amendments and any presence of contaminants and/or soil sterilants to ensure better survival of new plantings. Contractor shall allow sufficient time in the construction schedule to complete the bioassay tests and any subsequent mitigation should it be required. At least one test per median should be conducted; and conducted on the soil that will remain in place for planting. Should any conflicts arise between the soils investigation report and these plans, the project landscape architect shall be contacted for clarification
- Import soil mix, amendments, and aggregates, in types and quantities for project that have been certified and tested by an independent, local lab specializing in testing of planter soil mix for horticultural use.
- Provide fertilizers and other backfill materials in original packaging with current labels.
- Application of pre-emergent (2 applications) herbicide per label instructions by Certified Pesticide Applicator and in accordance with State Regulations.
- Application of weed killer per label instructions by Certified Pesticide Applicator in accordance with State Regulations.
- Installation/application of backfill planting soil mix and amendments per details and specifications.
- Construct aggregate profile per layout and depths on project plans.
- Fine grading of all landscape areas.
- Installation of plant materials.
- Installation of decomposed granite.
- Apply second application of pre-emergent.
- Maintenance landscape throughout construction period.
- Maintenance and Warranty Period.
- Record or As-Built Drawings.

**Materials:** Conform to Section 430 and 795 of the MAG Standard Specifications, except as modified herein.

**Section 430.2 General:** of the Standard Specifications is modified to add:

Soil Preparation Amendments & Conditioners:

Soil Amendments shall be tilled into the entire planting area to a depth of 8".

Commercial Fertilizer: Complete fertilizer of neutral character, with 50% of elements derived from organic sources and containing not less than 16% total nitrogen, 20% available phosphoric acid and 0% soluble potash. Ammonium Phosphate: Commercial product with an N-P-K value of 16-20-0. Incorporate into planting area soil at 10 pounds per 1000 sf. and for inclusion in tree and shrub planting pits per details.

Gypsum: Calcium sulfate dehydrate as supplied and packaged for landscape use. Incorporate into planting area soil at 20 pounds per 1000 sf and into tree and shrub planting pits.

Soil Sulphur: Elemental Sulphur (99.5% pure), commercially prepared so that 100% passes a 15 mesh screen and 50% passes a 50 mesh screen. Incorporate into planting area soil at 10 pounds per 1000 square feet.

Tree & Shrub Backfill Mix:

Tree & Shrub Backfill Mix shall be incorporated into the backfill soil for each tree and shrub planting pit at ratios stated below:

- 70% Clean Topsoil
- 20% Composted Forest Mulch
- 10% Clean Sand
- 2 Pounds Agricultural Grade Gypsum (Trees Only)

Supplier shall be local and reputable as a provider of horticultural grade planting materials and soil amendments. Backfill mix shall consist of:

- Components shall contain naturally aged and composted ponderosa pine bark, sawdust and gypsum. All components of soil mix shall be horticultural grade material.
- pH of all components shall be between 5.5 and 7.5.
- Soluble salts shall not exceed 1200.
- Plasticity index shall be between 3 and 10 inclusive.

Pre-mix at supplier's location. Supplier shall deliver to site as homogeneous mixture.

Provide lab test results for all backfill mix and components of for the material to be used on this project.

Lab Test Results: The contractor shall obtain, pay for, and provide lab test results for the backfill mix and all to be used on this project. Material to be used on this project shall have been tested within 5 days prior to delivery to site. Delivery tickets shall be provided at time of delivery and include lab results, date of testing, contact person and verification of source. Consider settlement and compaction and bring to level specified. Excess material shall be removed from job site.

Planting Tablets: Equal to Agriform 21 gram 16-20-0 tablets. Use at the following rates (or as otherwise recommended by the manufacturer and agronomy test):

- One-Gallon Container: 1 tablet.

- Three-Gallon Container: 2 tablets.
- Five-Gallon Container: 3 tablets.
- Fifteen-Gallon Container: 4 tablets.
- 24-inch Box: 6 tablets.
- Larger than 24-inch Box or 1 tablet per each ½ inch of trunk.  
Greater than 2" Caliper Trees:

Chemical Herbicides:

Pre-emergent Herbicide: Provide 40.4 percent oryzlin and 59.6 percent inert ingredients, or 75% dimethyl tetrachloroterephthalate and 25 percent inert ingredients, applied in accordance with manufacturer's instructions. Surflan or equal.

Round-Up or approved equal for weed and/or grass control on existing weeds for the duration of construction and maintenance and warranty period.

Planter Soil Preparation:

Planting areas shall be prepared for planting by:

- Removing existing decomposed granite, excess soil, rocks or boulders.
- Removing existing shrubs as indicated.
- Removing existing trees, only those noted for removal on drawings.
- Remove debris and deleterious materials greater than 1" from entire planting areas that are not conducive to healthy plant growth.  
Contact Owner's Representative regarding existing tree roots that present conflicts.

Landscape Grading:

After sub grade is established per project plans and details, contractor shall incorporate soil amendments and till in to a depth of 8"

Inform project inspector 48 hours prior to performing tilling operations. All materials to be tilled shall be available for inspection to assure proper quantities and procedures. Delivery tickets for all materials shall be provided to indicate date of delivery, material, cost, source, and quantity to receive payment approval for these items. Pre-packaged materials shall be stored in original packaging until incorporation. Compact planter soil to 85% and adjust grade as necessary by providing additional planter soil.

**Section 430.5 Decomposed Granite Area:** of the Standard Specifications is modified to add:

Decomposed granite color and gradation shall be as shown on drawings. Color to be approved by Owner's Representative. Provide decomposed granite with no lumps or balls of clay, caliche, organic matter, calcareous coating or any substance deleterious to plant life. Submit sample as required by these specifications.

Once area designated to receive decomposed granite or pit run rock, has been graded, compacted to proper level, and accepted, apply one application of pre-emergent to area and thoroughly water

in. After first application of pre-emergent herbicide, install decomposed granite and pit run rock. Place decomposed granite and pit run rock in landscape areas as noted on drawings and water settle. After water settling, rake to provide uniform smooth surface. Remove decomposed granite, which in the opinion of Owner's Representative, has undesirable contaminants. Add decomposed granite to areas that are thin. Do second application of pre-emergent to decomposed granite and pit run rock area and thoroughly water in. Decomposed granite shall be spread to consistent depth and level below all tops of adjacent planters or sidewalks.

**Section 430.5 Tree, Shrub, and Ground Cover Planting:** of the Standard Specifications is modified to add:

Trees, Shrubs, Groundcover, and Accents: Provide trees, shrubs, groundcovers, and accents of quantity, size, genus, species and variety shown and scheduled for landscape work and complying with recommendations and requirements of references. Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice, and free of disease, fungus, root-bound condition, insects, eggs, larvae and defects such as knots, sunscald, injuries, abrasions or disfigurement.

Do not prune plants before delivery. Trees with damaged or crooked leaders or multiple leaders (unless specified) will be rejected. Trees with fresh cuts of limbs over  $\frac{3}{4}$ " which have not completely calloused will be rejected. Provide copy of delivery ticket for each source for all plant material.

Label each plant with securely attached waterproof tag bearing legible designation of botanical and common name, including variety or cultivar.

Stakes and Wire Ties: Provide stakes of sound new 2" diameter x 10' cedar, redwood or Lodge pole pine, free of knotholes and other defects. Provide wire ties of 2-strand, twisted, pliable zinc coated galvanized iron wire not lighter than 12 gauge. Provide not less than 2" diameter reinforced rubber or plastic hose, cut to required lengths and of uniform color, material and size to protect tree trunks from damage by wires. Place stakes and trim stakes as required avoiding contact with limbs and trunk(s). Do not drive stake through root balls. Place stakes in position and quantity shown on details.

Layout for Plant Materials: Layout plant locations and re-stake if necessary per layout approved with irrigation installation. Secure Owner's Representative acceptance before start of planting. Make minor adjustments to plant locations on site as requested by Owner's Representative.

Setting and Backfilling for Trees, Shrubs and Accents: Set plant material stock plumb and in center of pit with top of ball at elevation necessary to accomplish finished landscape grades as per details. Remove pallets or containers before setting. Cut cans on two sides with a metal cutter or other cutting device; remove bottoms of wooden boxes before setting. Do not use spade to cut cans. Do not handle container plants by foliage, branches or trunks.

After removing plant from container, lightly scarify side of rootball to eliminate root-bound condition.

Do not use nursery stock if ball is cracked or broken before or during planting operation. When set, place additional backfill around base and sides of ball. Work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately two-thirds full, water thoroughly

before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. Do not set so top of rootball is below top of subgrade.

Include all fertilizing materials and other amendments in backfill mix. Do not apply to top of soil surface. Obtain inspection for procedures and materials as described in 3.02 B.

Remove all nursery plant labels and nursery stakes from plants.

Prune plants only if directed by Owner's Representative.

Stake all trees as shown on details. Set stakes vertical and space to avoid penetrating root balls or root masses. Allow enough slack to avoid rigid restraint of tree.

Begin maintenance of plant material.

**Method:** Conform to Section 430 and 795 of the MAG Standard Specifications, except as modified herein

**Section 430.7 Clean Up:** of the Standard Specifications is modified to add:

During landscape work, keep pavements clean and work area in orderly condition. Broom, scrub or hose affected areas on a daily basis or as directed by Owner's Representative to maintain a clean and neat work area. Protect all hardscape areas from marking and damage by equipment tires.

Promptly remove soil and debris from paved areas. Clean wheels of vehicles prior to leaving site to avoid tracking soil onto surfacing of roads, walks or other paved areas.

Protect landscape work and materials from damage due to landscape installation, operations by other contractors, or by trespassers. Maintain protection during installation periods. Treat, repair or replace Contractor-damaged work as directed by Owner's Representative at no cost to Owner's Representative. Remove all debris, trash, tire or other markings on pavement and excess materials generated by landscape installation.

**Section 430.8 Plant Guarantee and Maintenance:** of the Standard Specifications is modified to add:

The Contractor shall maintain the landscape areas for 3-months after the Final Completion date is established.

The site shall be maintained continuously as areas are completed during construction and after Final Completion. Personnel shall be provided to keep the site free of debris, keep the site free of weeds using chemical controls, applying fertilization at the proper time, and cultivating planted areas.

Plants shall be kept in healthy and growing condition by watering, removing weeds, and pruning only as needed to prevent conflicts with pedestrians and vehicles. The site shall be inspected at a minimum of once per week for maintenance considerations by the Contractor's superintendent and a written weekly comprehensive maintenance report provided to the Owner's representative.

The irrigation system shall be maintained by making any necessary repairs regardless of cause, to assure a complete and operational system as originally constructed. Repairs shall be made immediately upon detection of a malfunction. The Contractor shall be responsible to provide proper protection for pedestrians and vehicles in the case of water runoff onto paved surfaces. The entire irrigation system shall be tested weekly and reported in the weekly maintenance report.

The Contractor shall provide 48 hours advance notification for all chemical applications. The Owner's Representative shall provide approval for all applications prior to spraying. The Contractor shall take necessary precautions to protect the public or other users from chemical drift or overspray. Spraying shall be done during times of low site occupation and when it is not windy.

Chemical applications shall be performed by a Certified Pesticide Applicator and in accordance with State Regulations. The contractor shall provide the name of the chemical being sprayed, application rate, date and time of application.

Plant materials shall be replaced within one week of detection of their demise, death, or decline in condition for any reason. Replacement of plant material shall be tracked in the weekly maintenance report.

Open pits shall be filled in immediately by the Contractor if plants are removed for any reason at any time.

#### **Measurement and Payment:**

Measurement and payment for shrubs and tress shall be made at the unit price bid per each for the items as specified in the Bid Schedule and include all labor, materials, including tree and shrub backfill mix and planting tablets, and work associated with installing these items as shown on the plan. This will include soil preparation, amendments and conditioners, grading, excavation and import of soil for the median and chemical herbicides.

Measurement and payment for ½" Screened Decomposed Granite shall be made at the unit price bid per cubic yard for the item as specified in the Bid Schedule and include all labor and materials, associated with completing this work as specified and where shown on the plan.

Measurement and payment for 3" Rip Rap shall be made at the unit price bid per cubic yard for the item as specified in the Bid Schedule and include all labor, materials, and work associated with installing the rip rap as shown on the plan.

Measurement and payment for Plant Establishment Guarantee and Maintenance (including weed treatment) shall be made at the unit price bid per month for the item as specified in the Bid Schedule and include all labor, materials, and work associated with providing a Plant Establishment Guarantee and Maintenance. Including weed treatment as specified.

The Contractor shall warranty all trees and shrubs for 90 days from date of Final Acceptance against defects including death and unsatisfactory growth, except for defects resulting from unusual phenomena or incidents beyond Contractor's control.

Remove and replace trees and shrubs or other plants found to be dead or in unhealthy condition at any time during warranty period or as directed by Owner's Representative. Replace plants that are

in doubtful condition during warranty period, within seven days of plant's demise or notification thereof. Replacement of plants shall be tracked in the weekly maintenance report.

Replace plants lost to frost or heat/sun damage during warranty period at no additional cost to the City of Surprise. There is no limit to number of replacements due to frost damage. Contractor is responsible for complete removal of undesirable species such as but not limited to: Dallas, Bermuda, Johnson, and Nut Grasses or other undesirable weeds from the project area.

Replenish decomposed granite in existing planting areas to remain so that there is a 2" depth consistent throughout. This replenishing shall occur within the last 15 days of the warranty and maintenance period.

Re-stake trees as necessary to maintain proper support. Remove stakes only if directed by City of Surprise. If stakes are removed, fill cavity with clean soil only, not decomposed granite.

#### **ITEM 7 – IRRIGATION SYSTEM – Item 7.1 to 7.14**

**Description:** These items are for providing, installing and testing all irrigation system components as shown on the plans and equipment as specified, including application for water meters, installation of solar controllers, copper and PVC piping, sleeves, conduit, backflow prevention assemblies, enclosures, valves, valve boxes, pressure regulators, wye strainers, fittings, emitters, boxes, wiring and all other appurtenances for a fully functional irrigation system. Items of work include but are not limited to:

- Confirmation and Blue Staking for the location for all existing utility lines and sources. Provision of connection to existing utilities for new irrigation system at locations as shown and approved by the City of Surprise.
- Assurance that private systems adjacent to and affected by work are in operating condition and approved by adjacent property owner or designated representative at final completion.
- Clean up, inspection, and adjustments for complete coverage.
- Required regulatory tests, inspections, maintenance, and warranty.
- Provision of As-Built Drawings in hard copy and electronic (PDF) format.
- Completion of punch list, final walk through and acceptance.
- Warranty and maintenance periods.

**Materials:** Conform to Section 440 and 757 of the MAG Standard Specifications, except as modified herein.

**Section 440.3 Materials:** of the Standard Specifications is modified to add:

#### **General Piping:**

- Pressure Supply Line (from point of connection through backflow prevention unit): Type K, hard tempered Copper.
- Pressure Supply Lines (downstream of backflow prevention units): Schedule 40 PVC.

- All Lateral Piping: As shown on plans and colored purple.
- Emitter Tubing: Per Detail – Not to exceed 5' in length.

Copper Pipe and Fittings:

- Copper Pipe: Type K, hard tempered.
- Fittings: Wrought copper, solder joint type.
- Joints: Soldered with solder, 45% silver, 15% copper, 15% zinc and 24% cadmium and solids at 1125° F and liquids at 1145° F.

Brass Pipe and Fittings:

- Brass Pipe: 85% red brass, ANSI Schedule 40 screwed pipe.
- Fittings: Medium brass, screwed 125-pound class.

Plastic Pipe and Fittings:

Identify all pipes with the following indelible markings such as Manufacture's name, nominal pipe size, Schedule of class, Pressure Rating (PSI), NSF (National Sanitation Foundation) seal of approval, and Date of Extrusion.

Solvent Weld Pipe: Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM DI784; cell classification 12454-B, Type 1, Grade

- Pipe shall be purple.
- Fittings: Standard weight, Schedule 80, injection molded PVC; complying with ASTM DI784 and D2466, cell classification 12454-B.
  - Threads: Injection molded type (where required).
  - Tees and ells: Side gated
  - Threaded Nipples: ASTM D2464, Schedule 80 with molded threads.
  - Joint Cement and Primer: Type as recommended by manufacturer of pipe and fittings.

Low Pressure/Volume Systems:

- Fittings: Type and make recommended by tubing manufacturer.
- Drip Emitter Assembly to include solenoid valve, wye strainer, and pressure regulator as one unit as manufactured and supplied by the manufacturer. Hunter Industries or approved equal.
- Emitter: Single and Multiport, by Bowsmith or approved equal. Type, size and placement as shown on drawings.

Valve Boxes and Hardware:

For pull boxes for control wiring splices: round boxes manufactured by Carson Industries, or approved equal. All in-ground boxes with shall be colored purple for reclaimed water use in the future.



Valve lids shall have bolt down tops and stainless steel hardware. Provide submittal and proof of stainless steel hardware with submittals and at time of installation.

For valves, wye strainers and pressure regulator assembly, jumbo size rectangular boxes as manufactured by Carson Industries, or approved equal. Only one valve will be approved per box.

For pull boxes for control wiring splices: As manufactured by Carson Industries, or approved equal with stainless steel hardware.

Electrical Control Wiring: Low Voltage:

Electrical Control Wire, Connections and Spices: AWG UF UL approved No. 14 (1500 linear foot runs max) and No. 12 (2000 linear foot runs max) direct burial copper wire or larger, if required to operate system as designed. Direct bury splice.

Wire color system shall be as recommended by manufacturer for use with solar controller as approved.

Controller:

Size and type shown on drawings, installed per manufacturer in controller manufacturer's enclosure. Coordinate location with other trades and minimal bends in conduit. Controller shall be as specified on project plans.

**Method:** Conform to Section 440 and 757 of the MAG Standard Specifications, except as modified herein.

**Section 440.5 Trench Excavation and Backfill:** of the Standard Specifications is modified to add:

Do not begin backfilling operations until required system tests have been completed.

Provide material and compact to assure flush grades after settlement. Level finish grade at trenches before placement of decomposed granite.

Material not suitable for backfill shall be hauled away. Provide non-toxic and suitable backfill if excavated material is unacceptable or not sufficient to meet backfill, compaction and final grade requirements.

Do not leave trenches open more than 48 hours. Protect excavations in compliance with OSHA regulations.

Compact backfill to 85% maximum density, determined in accordance with ASTM D155-7, utilizing the following methods:

- Mechanical tamping.
- Puddling or ponding and/or jetting is prohibited.

**Section 440.6 Pipe installation:** of the Standard Specifications is modified to add:

PVC Piping: Snake pipe in trench as much as possible to allow for expansion and contraction. Do not install pipe when air temperature is below 40°F. Place manual drain valves or flush caps at low points and dead ends of pressure supply piping to ensure complete drainage of system. When pipe laying is not in progress, or at end of each day, close pipe ends with tight plug or cap.

Solvent Weld PVC Pipe: Lay pipe and make all plastic to plastic joints in accordance with manufacturer's recommendations.

PVC Primer: Specifically formulated for pipe and type of connection, as recommended by pipe manufacturer. Deliver in new and unopened containers. Solvent welds shall be allowed to cure at least 24 hours before testing. Potable water supply shall be used for all testing.

Sleeves: All piping under paving shall be sleeved with minimum 3" schedule 40 sleeve as noted and detailed. Contractor shall up size sleeves if pipe cannot move freely inside sleeves. Do not install couplings and fittings on pipe that runs through sleeves.

Install sleeves and pipe at depth required by local codes. Compact backfill material in 6 inch lifts. Set in place, cap and pressure test all piping under paving, in presence of Owner's Representative prior to backfilling and paving operations.

For pipe fittings up to and including 2 1/2", fittings and couplings are slip fitting tapered socket solvent weld type. Tapered socket solvent weld fittings are Schedule 80, or equal to or greater than schedule and pressure rating of plastic pipe being joined.

Size tapered fittings so dry, un-softened taper cannot be inserted more than halfway into socket. Plastic saddles and flange fittings are not permitted.

**Section 440.7 Valves, Valve Boxes, and Special Equipment Installation:** of the Standard Specifications is modified to add:

Place BFPU, irrigation equipment and controller with coordination and approval with other trades and with owner.

Valve Boxes:

Install one valve box for each type of valve installed as detailed. Valve box extensions are not acceptable except for master valves. Cutting of valve boxes is not allowed. Install pea gravel sump after compaction of all trenches. Place final portion of gravel inside valve box after valve box is backfilled and compacted.

Include brick supports at valve box corners.

Valve boxes shall be molded non-corrosive plastic, ASTM D638, D-356. Brand or rout controller letter and station number of lid on each valve box. Letter and number size: 1 inch to 1-1/2 inches. Depth of branding 1/8 inch into valve box lid. Create consistently sized and appearing letters.

Provide stainless steel hardware (i.e. bolts and washers) to secure all lids to boxes.

**Section 440.8 Sprinkler Head Installation and Adjustment:** of the Standard Specifications is modified to add:

Drip Valve Assemblies: Install drip valve assembly as detailed with minimum 2 cubic feet of pea gravel in bottom of valve box.

Drip Emitters: Place emitters as detailed. Flag each plant location to direct placement of emitters and provide layout for all plant materials. Use different color flags for trees. Secure owner's acceptance for plant locations prior to completing irrigation system installation. Use multi-port emitters for trees and shrubs. Add single ports as needed to provide irrigation to all installed plant material.

**Section 440.9 Automatic Control System Installation:** of the Standard Specifications is modified to add:

Wiring for valves to controller:

- Bury control wiring, between controller and electric valves in pressure supply line trenches, strung as close as possible to main line pipe. Locate wires consistently below and to one side of pipe. If necessary, place wire in separate trenches. Obtain approval from City of Surprise for proposed location.
- Bundle wires at 10-foot intervals.
- Provide expansion loop at every electric control valve location (round valve box if needed). Form expansion loop by wrapping wire at least eight times around 3/4-inch pipe and withdrawing pipe to leave neatly coiled loop in round box.
- Make all splices and connections with a dry splice method using.
- Install all control wire splices not occurring at control valve in separate splice valve box.
- Install ground wire.

Electric Control Valves: Install at depth below finished grade as shown on Drawings and as detailed. When grouped together, allow no more than 12 inches between valve boxes. Install each remote control valve in a separate valve box. Install individual valve box flush with ground. Place clean pea gravel in bottom of each box below valve, a minimum of 2 cubic feet.

**Section 440.10 Flushing and Testing:** of the Standard Specifications is modified to add:

Construction Review: The owner's representative shall periodically observe work in progress and the contractor's interpretation of the construction documents and to address questions with regards to the installation.

The contractor shall schedule reviews for irrigation system layout and testing prior to covering work and prior to backfilling around trees. Impromptu reviews by owner or owner's representative may occur at any time during the project. Final review will occur at the completion of the irrigation system installation and As-Built Drawing submittals. The contractor is responsible maintain As-Built Drawings on a daily basis for review by the owner's representative. As-Built drawings shall be provided in hard copy and electronic on a compact disc (CD) prior to project acceptance. CD shall be labeled with client name, project name, number and date.

Flushing: After piping, risers, and valves are in place and connected, before installation of distribution equipment, thoroughly flush piping system from dead end fittings under full head of water pressure. Maintain flushing for ten minutes through furthestmost valves. Cap risers after flushing.

Testing: Notify owner representative in advance of all testing. Supply force pump and all other test equipment as needed.

After backfilling and installation of all control valves, fill pressure supply line with water and pressurize to 40 PSI over designated static pressure or 120 PSI, whichever is greater, for two hours. All pressure tests shall be done with PITO tube and gauge.

Leakage/Pressure Loss: Test is acceptable if no leakage or loss of pressure is evident during test period. Leakage will be detected and documented by inspection with system in full operation. Replace defective pipe, fitting, joint, valve or appurtenance. Cement or caulking to seal leaks will not be allowed. Repeat testing until the pipe is approved by the owner's Representative.

Retest system until test pressure can be maintained for duration of tests. Before final acceptance, pressure supply line shall remain under pressure for 48 hours. Record and document time and date for all pressure testing whether or not the owner is able to be present. Photographs of pressure readings are acceptable with a time date stamp. Provide readings to owner as soon as complete via email. Include pressure readings and documentation as part of the close out documents.

Final Acceptance: Upon completion of installation, "fine-tune" entire system by regulating valves, adjusting patterns and break-up arms, and setting pressure reducing valves at proper and similar pressure to provide optimum and efficient coverage. Flush and adjust distribution heads for optimum performance and to prevent overspray onto walks, roadways and buildings. Heads of same type shall be operating at same pressure. Make all adjustments before Final Acceptance, as directed. Arrange for owner's representative's presence 48 hours in advance of walk-through. Show evidence to owner's representative that owner has received all accessories, charts, testing documentation, and equipment as required.

Operate each zone in sequence from controllers, using remotes if available, for owner's representative at time of walk-through to insure correction of all incomplete items. The owner's representative will visually observe operation, water application patterns and leakage. Adjust items deemed not acceptable by owner's representative. Owner's representative will do only one final acceptance walk-through. Set irrigation clock appropriate for season. Provide schedule of clock operation including each station, run time, run duration and frequency of irrigation.

### **Measurement and Payment:**

Measurement and payment shall be made at the price bid per each for the item, Irrigation Controller, 1" Remote Control Valve and Assembly (Purple), Flush Caps and 7" Round Box (Purple), Mainline Gate Valve and 10" Round Box (Purple), Isolation Valve and Box For Lateral Lines (Purple), Single Port Emitter and Riser Assembly w/ Bug Cap, and Multi-Port Emitter and Riser Assembly w/ Bug Cap as specified in the Bid Schedule. Payment shall include all labor, materials, and work associated with installing these items complete in place as shown on the plan.

Measurement and payment for installing the 1" Reduced Pressure Backflow Prevention unit and Enclosure shall be at the unit price per each as specified in the Bid Schedule and shall include all labor and materials to provide the item complete in place as shown on the plan.. All material required including pipes, valves, fittings, concrete foundations and markers are incidental and no extra payment will be made for these items.

Measurement and payment shall be made at the price bid per linear feet for the Irrigation pipes and Sleeve, and Metal Locator Tape as specified in the Bid Schedule including trenching, backfill and compaction. Payment shall include all labor, materials, and work associated with installing pipes as shown on the plan.

#### **ITEM 8 – TRAFFIC SIGNS WITH POST AND BASE**

**Description:** Street Signs, bases and posts shall be installed per City of Surprise Standard Detail 4-22.

**Signs:** Flat Aluminum Sign Panel, Diamond Grade shall be installed per MCDOT Standard Specifications Section 465.

**Measurement and Payment:** Payment for Street signs with post and base will be paid at the unit price of each as specified in the Bid Schedule and shall include all labor, equipment and materials. Signs that require more than one post & base shall be measured as a single unit.

#### **ITEM 9 – THERMOPLASTIC STRIPING (4" EQUIV)**

**Description:** Thermoplastic Pavement Markings in Section 462.3.2 of the MCDOT Supplement to the MAG Standard Specifications should be revised as follows:

Thermoplastic pavement markings shall not be applied to any new asphalt pavement surface within 30-days after pavement placement or after the placement of a surface treatment. Work under this item includes installation of all required RPM's. RPM's (Type D, Yellow 2-Way and Type G, Clear, 1 Way) shall be installed per MCDOT Standard Specifications Section 463.

Temporary striping shall be applied immediately following the placement of new pavement. Layout of temporary striping shall be as approved by the City of Surprise prior to installation.

Contractor shall also refer to notes from construction plans for additional information.

**Measurement and Payment:** Measurement for thermoplastic and temporary striping shall include all specified widths (4", 8", and 24") shall be made based on final quantities for thermoplastic striping, in which temporary striping shall not be measured separately. No separate payment will be made for temporary paint striping.

Payment for Thermoplastic striping will be paid at the unit price of linear feet of 4" equivalent lengths installed after installation of surface course asphalt, as specified in the Bid Schedule and shall include all labor, equipment and materials.

## **ITEM 10 – STRIPING SYMBOL**

**Description:** Striping symbols shall be installed per MCDOT Standard Specifications. Symbols shall be thermoplastic pavement symbols. Temporary symbols shall be applied immediately following the placement of new pavement. Layout of temporary symbols shall be as approved by the City of Surprise prior to installation.

Final striping symbols shall not be applied to any new asphalt pavement surface within 30-days after pavement placement or after the placement of a surface treatment.

**Measurement and Payment:** Payment for striping symbols will be paid at the unit price of per each, installed after installation of surface course asphalt, as specified in the Bid Schedule and shall include all labor, equipment and materials.

## **ITEM 11 – Obliterate Pavement Markings**

**Description:** The work under this item is for pavement marking removal in accordance with these specifications, where indicated on the Striping Plans, or where determined by the Engineer.

**Method:** Conform to Section 460 of the MCDOT Supplement to the MAG Uniform Standard Specification, except as modified herein:

Painting over existing striping shall not constitute stripe obliteration.

**Measurement and Payment:** of the MCDOT Supplement to the MAG Uniform Standard Specification is revised to read:

Removal of Pavement Markings will be measured as a single complete Item of work and paid at the price indicated on the Schedule of Bid Items, which amount shall be considered full compensation for the work as described herein and as shown on the plans.

## **ITEM 12 - TRAFFIC CONTROL**

**Description:** Traffic control shall conform to Section 401 MCDOT Supplement to the MAG Standard Specifications except as modified as follows:

MAG Standard Specifications shall be modified to include:

It shall be the responsibility of the contractor to develop and implement a traffic control plan for the project. The Contractor shall use the current City of Surprise "Temporary Work Zone Traffic Management Policy" available on the City's website. If there is a discrepancy between the following traffic specifications and the City of Surprise "Temporary Work Zone Traffic Management Policy" the City policy shall govern. Part IV of the "Manual On Uniform Traffic Control Devices For Streets And Highways" (U.S. Department of Transportation, Federal Highway Division) and all revisions thereto,

the Traffic Manual from the City of Phoenix and all revisions thereto, shall serve as a guideline in Contractor's application of traffic control.

It shall be the Contractor's responsibility to provide, erect and maintain and remove after completion of the work all necessary signs, barricades, temporary traffic signals, barriers, berms, lights, high level warning devices, delineators, and any other required devices, uniformed officers, and flagman, necessary to properly mark and control the construction area for the safe and efficient movement of traffic. Temporary traffic control devices shall be installed prior to the start of any work.

It shall be the Contractor's responsibility to construct the required by pass lanes in order to make the road available to traffic. The City of Surprise's approval of the Contractor's traffic control method shall not relieve the Contractor of its responsibility to protect the work, Contractor's personnel, or the general public.

The Contractor must notify the Traffic Engineering Division at phone (623) 222-6150 of all traffic restrictions of City roads and streets. The notification may be by FAX submittal at phone number (623) 222-1701. The Traffic Control Plans (TCP) and notification must be submitted for review at least two working days (48 hours) prior to start of construction. Form TE-1 shall be completed in full and submitted with the TCP to begin review. Construction is not authorized to proceed without the City's approval of the TCP and concurrence that construction can precede with minimum public and traffic impact. Once Form TE-1 is approved and returned, any changes to the TCP or specific information approved in a previous submittal shall require a re-submittal of Form TE-1 and the TCP.

The Contractor shall provide and maintain all necessary signs, barricades and centerline vertical panels for five (5) working days beyond the concrete cure time or acceptance of the project by the Engineer, whichever period is greater.

**Traffic Control Plan:** of the MCDOT Supplement to the MAG Uniform Standard Specification is revised to read:

The Contractor shall submit a traffic control plan for approval, showing placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan shall be professionally drawn on a 24" x 36" reproducible medium, and shall be submitted to the Engineer at the pre-construction meeting unless otherwise directed.

**Payment:** of the MCDOT Supplement to the MAG Uniform Standard Specification is revised to read:

- Payment for Traffic Control shall be made at the lump sum bid price in equal payments distributed over the entire duration of the project. **Payment for Traffic Control shall be full compensation for all labor, pilot cars, flagmen, materials, traffic control devices and miscellaneous incidental items necessary to complete the work. No additional payment will be made for the off duty police officer required when working within 150 ft of the signalized intersection.** Contractor is required to include the same in the price of traffic control item. .No additional payment will be made for obliterating the striping for traffic control.

### **ITEM 13 - PERMITTING & SWPPP**

#### **Description:**

Permitting – Refer to Section 16 for permitting requirements. It shall be the responsibility of the Contractor to obtain and provide payment for all required project related permits.

SWPPP - AZPDES Plan and Notification shall conform to Section 107.2 of the MAG Standard Specifications except as modified as follows:

The work under this Item shall consist of preparing and providing an Arizona Pollutant Discharge Elimination System (AZPDES) and Notification in accordance with the requirements of the Arizona Department of Environmental Quality's (ADEQ) Construction General Permit.

The Contractor shall take the following steps:

- Submission of a Notice of Intent (NOI) that includes general information and location to closest water body;
- The development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) with appropriate BMPs to minimize the discharge of pollutants from the site. The operator (Contractor) must submit the SWPPP along with the NOI if the site is located within 1/4 mile of a unique or impaired waters\*; and
- Submission of a Notice of Termination (NOT) when final stabilization of the site has been achieved as defined in the CGP or when another operator has assumed control of the site.
- "Unique waters" are listed in AAC R18-11-112 and "impaired waters" are waters that do not meet designated uses and are listed as such under Section 303 of the Clean Water Act.
- The Contractor shall provide copies of all plans and notifications to the Engineer.

**Measurement and Payment:** Measurement and payment work performed under this Bid Item shall be measured as a single complete item of work and paid at the lump sum price indicated on the Bid Schedule, which price shall be full compensation for the work as described herein. Contractor reimbursement shall be made in equal payment installments spanning the construction contract period. Contractor shall submit anticipated payment request table for approval in advance of first payment request submittal. Price bid shall include all labor, material, and equipment necessary to provide Permitting and SWPPP, in accordance with the plans, details, special provisions and all addendums.

### **ITEM 14 - MOBILIZATION / DEMOBILIZATION**

**Description:** Mobilization/Demobilization shall be per Section 109 of the MCDOT Supplement to MAG Standard Specifications.

**Measurement and Payment:** Payment for Mobilization/Demobilization will be paid at the unit price of lump sum as specified in the Bid Schedule and shall include all labor and materials.



## **ITEM 15 –CONTRACTOR QUALITY CONTROL**

**Description:** All material and laboratory testing (Quality Control) shall conform to the City of Surprise Engineering Development Standards.

**General:** All tests which require the services of a laboratory to determine compliance with the contract documents shall be performed by an independent commercial testing laboratory acceptable to the City of Surprise (City). The laboratory shall be staffed with experienced engineers & technicians and shall be properly equipped and fully qualified to perform the tests in accordance with the specified standards.

- A. **Testing laboratory services furnished by the Contractor** - Contractor shall retain an experienced accredited materials testing firm to be responsible for all laboratory testing services in connection with concrete materials & mix designs, materials & mix designs for asphaltic concrete & subgrade and gradation & mix designs of bedding & backfill materials. The Contractor's testing firm shall also be responsible for performance of all quality control tests made in the field or laboratory on poured concrete, asphalt densities, fill and backfill materials, in-place field density tests on fills during and after their incorporation in the Work in general conformance with MAG Specifications and as directed by the City.

The Contractor shall not retain any testing laboratory against which the City has reasonable objection, and if at any time during the construction process the services become unacceptable to the City, the City may request in writing that such services be terminated. If the City determines that sufficient cause exists, the Contractor shall terminate the services and engage a different testing laboratory. No change in contract price or time shall be given for such a change.

**Transmittal of Test Reports** - The testing laboratory retained by the Contractor will furnish three (3) copies of a written report of each test performed by laboratory personnel in the field or laboratory. One (1) field copy to the Contractor as quickly as possible after each test is completed. Two (2) copies of each test report will be transmitted to the City at each construction meeting, unless directed otherwise. Reports shall contain records of all testing performed to date, and shall clearly indicate any unacceptable test results and results of subsequent retesting.

- B. **Testing Laboratory Services Furnished by the City** - The City shall retain the services of an independent testing firm to perform field quality control tests as needed to validate the results of the firm retained by the Contractor. Such testing shall be performed with minimum interference with construction operations. The City shall pay all charges of testing laboratories for such testing.

The City shall determine the exact time and location of field sampling and testing and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by the Contractor and with the Contract Documents.

Arrangements for delivery of samples and test specimens to the testing laboratory under this section will be made by the City. The testing laboratory shall perform all laboratory tests

within a reasonable time consistent with the specified standards and shall furnish a written report of each test.

The Contractor shall furnish all sample materials and cooperate in the sampling and field testing activities, interrupting the Work when necessary. When sampling or testing activities are performed in the field by the City or testing laboratory personnel, the Contractor shall furnish personnel and facilities to assist in the activities.

The City shall not retain any testing laboratory against which the Contractor has reasonable objection, and if at any time during the construction process the services become unacceptable to the Contractor, the Contractor may request in writing that such services be terminated. The request must be supported with evidence of improper testing. If the City determines that sufficient cause exists, the City shall terminate the services and engage a different testing laboratory.

- C. The cost for testing of material reworked or replaced subsequent to failing test results shall be borne by the Contractor; costs for such retests shall be deducted from monies due for monthly progress payment to the Contractor. The cost of any rework as a result of failing test results will also be borne by the Contractor.

## **ITEM 16 CONSTRUCTION SURVEY, LAYOUT**

**Description:** Construction Stakes, Lines and Grades of Section 105.8 of the MAG Standard Specification text shall be deleted and the following inserted:

**General:** If required, the Contractor may contact Wood Patel for clarification related to survey control information shown on the plans.

The Contractor shall furnish all materials, personnel, and equipment necessary to perform all surveying, staking, laying out of control lines and verifications of the accuracy of all existing control points which are re-delineated in the Contract Documents. The work shall be done under the direction of a Registered Land Surveyor licensed to practice in the State of Arizona.

**Field Books:** The Contractor shall furnish field books to be used for recording survey data and field notes. These books shall be available for inspection by the City at any time and shall become the property of the City upon completion of the work.

**Construction Stakes:** The Contractor shall set construction stakes and marks establishing lines and grades for road work, curbs, gutters, sidewalks, structures, buildings, centerlines for utilities and necessary appurtenances, right-of-way/easements and other work as indicated in the Contract Documents and shall be responsible for their conformance with the plans and specifications.

The stakes shall be established in accordance with the following guidelines which represent the minimum standard and the Contractor shall provide additional stakes and controls necessary to perform the work. The Contractor shall be held responsible for the preservation of all stakes and marks and will replace, at no additional cost to the City, any construction stakes or marks which have been carelessly or willfully destroyed by any party.

**A. Curb and Gutter**

1. Cut/fill stakes for rough grade shall be set at one hundred (100) foot intervals with cuts to the top of curb.
2. Finish grade stakes shall be set to curb grade at twenty-five (25) foot intervals, at grade brakes, angle points, transitions, returns, driveways, alley entrances, sidewalk ramps and other curb control points. The stakes shall be tacked for line on a two (2) foot offset to the back of curb.
3. Face of curb forms shall be checked for grade at flow line prior to placing concrete where longitudinal grades are one tenth (0.10%) percent or less.

**B. Roadway (Including Sidewalks):**

1. Subgrade stakes shall be set to subgrade elevation at fifty (50) foot intervals on straight sections, twenty-five (25) foot intervals through vertical curves, on horizontal curves with radius of six hundred (600) feet, or less, and/or slopes of less than fourteenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and grade breaks.
2. Stakes for base course shall be set to elevation at thirty-three (33) foot intervals on straight sections, twenty-five (25) foot on horizontal curves with radius of six hundred (600) feet, or less, and/or slopes of less than fourteenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and at grade breaks.
3. Pavement edges shall be controlled by utilizing a wire control mechanism. Stakes shall be set to finished elevation at thirty-three (33) foot intervals on straight sections, twenty-five (25) foot intervals on curves with radius of six-hundred (600) feet, or less, and/or slopes of less than four-tenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and grade breaks.

**C. Right-of-Way/Easements:**

1. As shown on the construction plans, improvements primarily are within public right-of-way and/or easements. Contractor to set stakes showing the right-of-way/easement lines at twenty-five (25) foot intervals on straight and curved sections.
2. Stakes shall be set at all found and/or calculated property corner locations.

**Inspection and Acceptance of Work:** The City reserves the right to make inspections and random check of any portion of the staking and layout work. If, in the City's opinion, the work is not being performed in a manner that will assure proper control and accuracy of the work, the City will order any or all of the staking and layout work redone at no additional cost.

**ITEM 17 AS-BUILTS**

**Description:** As-Builts shall conform to Section 105.2 of the MAG Standard Specifications except as modified as follows:

**General:** The As-Built work shall conform to the City of Phoenix Survey Section Standard Requirements for: Staking, As-Builts, Quantity Calculations dated January 1, 1980.

The City of Surprise will provide the Contractor with the original bond plan sheets for use in preparing final As-Builts. Information shall be shown on these originals and then scanned to mylars, depicting the constructed dimensions, elevations, grades and materials including locations of existing underground utilities found during construction.

The Contractor shall exercise extreme care in handling the originals and will return them to the City in like condition. In the event the originals are damaged or determined by the City to be unacceptable, the Contractor shall replace the originals by contacting the Design Engineer of record and have new drawings produced. All costs incurred as the result of replacing the originals shall be borne by the Contractor. The City will be the sole judge in determining whether the As-Builts are acceptable.

The As-Built drawings shall be certified by an Arizona Registered Land Surveyor. As-Built drawings shall be delivered to the City of Surprise within thirty (30) days from the date of final inspection and acceptance by the City of the work completed under this contract. Final payment will be made only after submitted As-Builts are accepted by the City.

**END OF SPECIAL PROVISIONS**